TITLE

Building a Tracking System for Carbon Monoxide Poisoning: A Public/Private Partnership to Link Health and Environmental Data

THEME

Disseminate Credible Information to Guide Policy, Practice and Other Actions to Improve the Nation's Health

KEYWORDS

carbon monoxide, power outage, environmental public health indictors

BACKGROUND

Unintentional carbon monoxide (CO) poisoning mortality and morbidity is a substantial health problem in the U.S. for which an estimated 15,000 people seek emergency department (ED) care and approximately 480 die annually. The contribution of different exposure sources is ill-defined.

OBJECTIVE(S)

Maine is building a tracking system that links CO health outcome and power outage data to assess our ability to: 1) Develop and validate a case definition; 2) Estimate morbidity and mortality; 3) Understand the contribution of various exposure sources, including power outages; 4) Develop and track EPH Indicators (EPHIs); 5) Collaborate with private partners; 6) Get and operationalize input from data users; and 7) Target prevention measures.

METHOD(S)

1) Case definition: Charts of possible CO cases will be abstracted and the sensitivity and specificity of various case definitions determined.
2) Population estimates: All unintentional cases of CO poisoning were identified in morbidity (hospital visits) and mortality data (death certificate) from 1998 to 2002 and described by patient characteristics (age, sex, hospital admission type, primary payer [worker's compensation vs. other]), location (county; town) and time. Age- and sex-specific rates were developed using intercensal population estimates. Characteristics of patients admitted during the "outbreak" month of an ice storm (1/7/1998-2/6/1998) and "non-outbreak" period (2/7/1998–12/31/2002) were compared using Mantel-Haenszel odds ratios and chi-square tests.
3) Hazard data: A partnership was formed with Central Maine Power Company (CMP), which provides power for 75% of Maine households.
4) Linkage: Data will be linked by date and zipcode; case cross-over analysis will assess the contribution of power outages and related risk factors.
5) Intervention data: A nine-question module (generator ownership and use, CO detector use) was developed and administered in the 2004 Maine BRFSS.
6) EPH Indicators: Input from the Maine EPH Planning Consortium was solicited for the development of EPHIs.

RESULT(S)

Population estimates: A total of 1056 patients met the case definition in the 5-year period; 430 (34.1/100,000) in 1998 and an average of 149 (12.2/100,000) cases in the remaining years.   Incidence was highest in 18–34 year olds (19.0; 1999-2002) and lowest in those >65 (5.2/100,00; 1999-2002). More cases were observed in fall and winter. Comparing patients with onset during the ice storm to all others, a higher percentage were female (62% vs. 47%; OR 1.9; p-value <0.001); over age 65 (14.2% vs. 6.0%; p-value=0.011); while fewer had worker's compensation as their primary payer (0.3% vs. 10.2%; OR 125; p-value <0.001).

Hazard data: CMP will provide data on power outages including time/date, duration, and cause of the outage.

Linkage: Results of the case cross-over analysis will be presented.

EPH Indicators: Hazard, exposure, health outcome and intervention EPHIs and a mechanism for tracking them will be presented.

DISCUSSION/RECOMMENDATION(S)

This linkage pilot project has many elements of a successful EPHT system. Unintentional CO poisoning is a public health problem with known environmental and occupational sources, some of which can be indirectly tracked, and may be mitigated by, public health prevention efforts. Utilizing these methods and a BRFSS module, we will be able to develop and evaluate appropriate prevention strategies.

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